

USSR Agriculture: Winter Crop Conditions

An Intelligence Assessment

Secret

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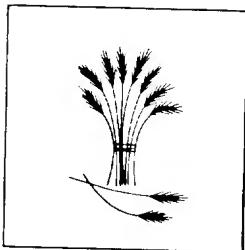
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USSR Agriculture

SUMMARY

The winter grain crop, which normally accounts for roughly one-third of total USSR grain production, has sustained only an average amount of damage thus far. Current evidence suggests that 15 to 20 percent of the area sown this year has been killed. As of early February, about one-third of the winter grain area has at best minimal snow cover and remains vulnerable to sudden cold snaps.

Assessment of the full extent of this year's damage cannot be made until late spring. Winterkilled areas will be reseeded with lower-yielding spring grains, but even more than normal losses this winter would not necessarily preclude a successful 1978 grain harvest.

Unless the 1978 grain crop reaches the plan target of 220 million tons -- a level reached only twice in the past -- we expect Soviet grain purchases for delivery in marketing year 1979 to be very large. For example, a crop of 205 million tons -- the mid-point of a 195 million to 215 million ton range suggested by recent yield trends -- would suggest gross imports of 20 million to 25 million tons in the marketing year from 1 October 1978 to 30 September 1979.

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USSR: Winter Crop Conditions

Winter grain sowing operations last fall were largely successful. Favorable weather in the European USSR, where most of the winter grain is grown, fostered seeding on about 38.5 million hectares, equal to the area sown for the 1977 harvest and roughly 3 million hectares above the average for the last five years (table 1).* An even larger area would have been sown had waterlogged fields and some localized flooding in the north-central Ukraine not hampered the 1977 harvest in this area and partially precluded winter sowing.

Crop development during the fall was favorable in most areas. Late August and early September weather was generally warm and dry. Sowing in much of the Ukraine, Moldavia, and the North Caucasus was completed at optimal dates, and occasional light showers provided moisture to the newly sown grains. Temperatures were 5° to 6°C below normal from mid-September to early October but gradual cooling hardened the plants, making them less susceptible to freezing temperatures. By mid-October, winter grains in the Central, Volga, Central Black Earth, and Ural regions had entered winter dormancy, and growth in the southern winter grain areas -- the Lower Volga, central and southern Ukraine, and the north Caucasus -- had slowed.

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Despite these overall good conditions, some key areas suffered local problems. In the Central Black Earth Region, which normally accounts for roughly 4 percent of the USSR's winter grain production, [REDACTED] poor emergence of the winter grains and low crop vigor levels

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[REDACTED] Fields in the adjacent areas of the northern Volga-Vyatka and Volga Regions had uneven growth patterns. Much of this area was hit by early frosts. Temperatures dropped to -8°C for more than 48 hours in mid-October, causing spotty winterkill of insufficiently hardened plants.

* Soviet announcements put the area sown to fall grains in state and collective farms at 36.9 million hectares. In addition, we estimate that roughly 1.5 million hectares were sown by other state enterprises and private farmers.

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TABLE 1

USSR: GRAIN AREA
(million hectares)

All grain:	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Harvested area	126.7	127.2	127.9	127.8	129 ³	--
Winter grain:						
Sown area ¹	28.4	37.0	35.5	37.5	38.5	38.5
Harvested area	26.9	29.8	29.2	27.4	39.0	--
Winterkill ²	1.5	7.2	6.3	10.1	9.5	6-8 ³

1. Sown in preceding fall for harvest in the given year. Includes state and collective farms as well as private holdings and other state enterprises.
2. Includes fall sown grains used as green forage crops in the spring.
3. Estimate.

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In November, unseasonably warm weather renewed plant growth in many areas, leaving the winter grains vulnerable to sudden freezes. Temperatures for the month were 5° to 7°C above normal in much of the European USSR and 8° to 9°C warmer than usual in the northern Urals. Plants continued to develop in much of the Baltic Region, Belorussia, Ukraine, and North Caucasus, and previously dormant winter grains renewed growth in much of the southern part of the Central Black Earth and lower Volga Regions. Apart from the southernmost oblasts of the Ukraine and North Caucasus, vegetative growth normally ceases in late October or early November. This season, growth continued into late November and early December when colder temperatures put plants in most areas into dormancy.

Most of the damage done thus far to the winter grains occurred between mid-December and mid-January. A succession of high pressure systems moved slowly across the northern European USSR, sweeping cold, arctic air into Moldavia, the central and southern Ukraine, the Crimea, and, at times, Krasnodar Kray. Freezes to -22°C were common, with temperatures as low as -20°C reported as far south as Krasnodar. Because of the unseasonably warm weather in November, plants in some areas were not sufficiently hardened to withstand the sudden severe cold nor was snow cover adequate to insulate the crops (maps A and B).

Current Status of the Winter Grains

For the USSR as a whole, the area lost to winterkill thus far appears to be no greater than average, that is roughly 15 percent to 20 percent of the sown area. Conditions have varied, however, and in some localized areas losses are believed to be substantial (map C):

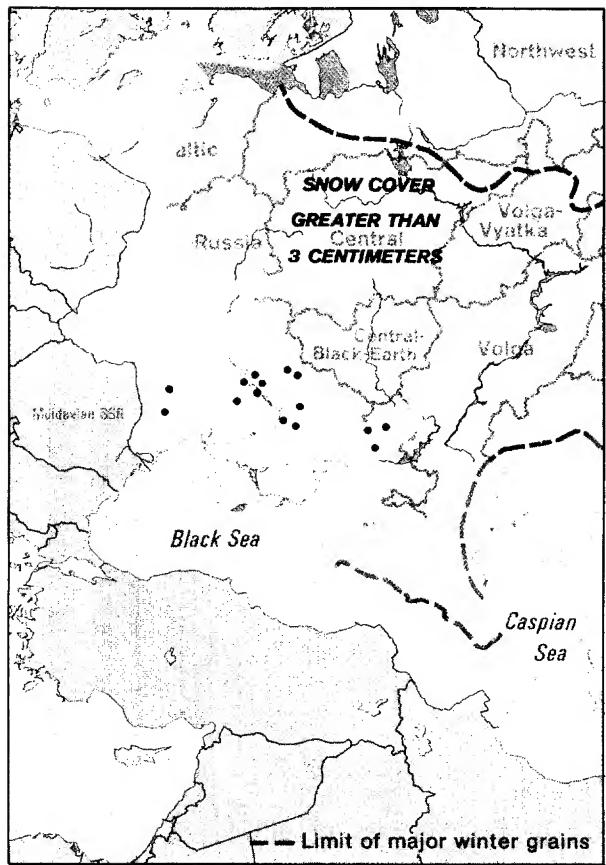
- Poor emergence and exposure to killing frosts have lowered yield prospects for much of the Central Black Earth Region.*
- In some parts of the important winter-grain producing areas of Moldavia, the Ukraine, and the north Caucasus, frequent exposure to killing temperatures without adequate snow cover has led to above average winterkill.

* Winterkill is traditionally high in the Central Black Earth Region. Each year over the past 16 years one-third of the winter grain area in this region has had to be resown. In 1977, winterkill exceeded 50 percent of the sown area in many of the region's oblasts.

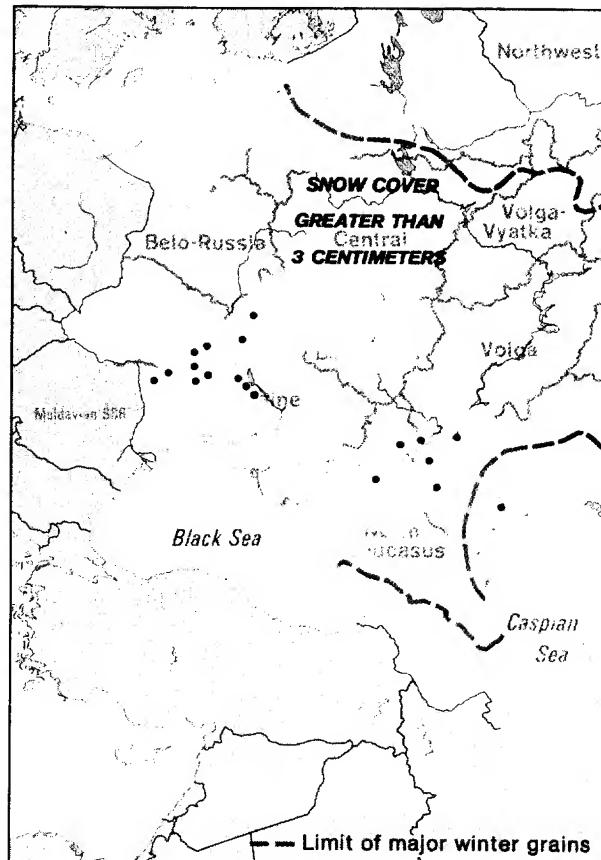
Map A

USSR: Mid-December 1977 Snow Cover

- Station reporting potentially killing temperatures (below -16°C) during 12-18 December 1977



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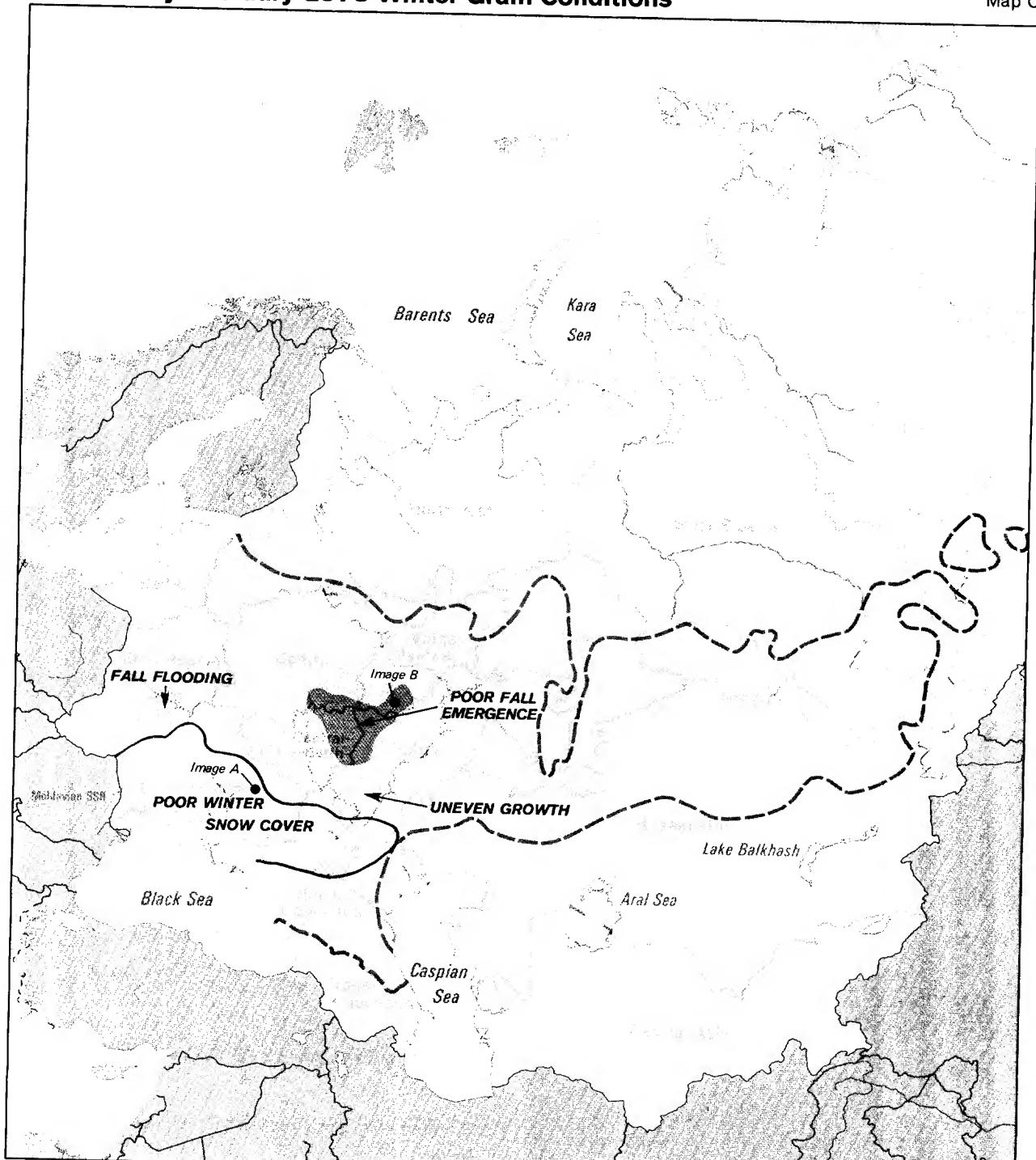
Map B

USSR: Early January 1978 Snow Cover

- Station reporting potentially killing temperatures (below -16°C) during 6-12 January 1978

USSR: Early February 1978 Winter Grain Conditions

Map C



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— — Limit of major winter grains

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Although the area with at least minimal snow cover has expanded since mid-January, much of the winter grain area remains snow free and vulnerable to extreme temperatures. A full assessment of winter grain damage will not be possible until late spring. Alternate periods of thawing and freezing, which can cause widespread damage, are common during the next two months.

The 1978 Grain Outlook

Winter grain losses do not preclude a successful 1978 grain harvest. Areas lost during the winter will be resown or overseeded to spring grains. Although widespread resowing operations interfere with efforts to seed spring grains and other spring crops, the Soviets are in relatively good shape this year. Fall plowing eases the spring work load and enhances spring grain yields. Last fall 112 million hectares were plowed, 14 million hectares more than in the fall of 1976.

Soviet plans call for a grain harvest of 220 million tons. This target is in keeping with the 1976-80 Five-Year Plan goals but is almost 25 million tons above 1977 production (table 2). Projection of past yield trends, employing varying assumptions regarding 1978 weather prospects, indicates that expectations for a crop within the 195 million to 215 million ton range would be more reasonable.* A crop within this range, which is by no means certain, would leave Moscow short of the grain required to continue the current strong recovery of the livestock program and would necessitate imports. For example, a crop of 205 million tons, the midpoint of the range, suggests Soviet imports in marketing year 1979 (October 1978-September 1979) of 20 million to 25 million tons.**

* Calculations are based on an expected harvested area of 128 million hectares, only slightly above the average area harvested during 1973-76.

** Soviet purchases for delivery in marketing year 1978 now total between 20 million and 25 million tons; actual deliveries are expected to spill over into MY 1979.

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TABLE 2

USSR: GRAIN PRODUCTION
(million tons)

	<u>Average Annual, 1971-75</u>	<u>1976</u>	<u>1977¹</u>	<u>1978 Plan</u>
Total Grain	181.6	223.8	195.5	220
wheat	89.0	96.9	93	NA
corn	10.2	10.1	11	NA
rice	1.8	2.0	2.2	NA

1. As of early February 1978, the only 1977 grain production data available from the Soviets are for all grain, wheat, corn, and rice.

This paper was prepared by the Agriculture Team of the Environment and Resource Analysis Center, Office of Geographic and Cartographic Research. Comments and queries are welcome and should be directed to [redacted] on 351-3748.

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